

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/00974

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int. Cl. <sup>7</sup> : A61M 1/12, F15B 3/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Refer electronic database consulted below		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
DWPI: keywords: 1 <sup>st</sup> invention: heart aorta diaphragm cuff fluid pressure, 2 <sup>nd</sup> invention: pleural thoracic, 3 <sup>rd</sup> invention: failsafe cog and similar terms		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, Y	US 6 030 336 A (FRANCHI) 29 February 2000 column 2 lines 30 to 63, column 7 lines 10 to 16, column 3 lines 35 to 39	1-8, 10-13, 18-22
A	abstract column 8 lines 27 to 30	1-30 31
X	FR 2 767 874 A1 (COMMISSARIAT ENERGIE ATOMIQUE) 5 March 1999 see English abstract	1
A	abstract	1-31
Y	US 4 277 706 A (ISAACSON) 7 July 1981 figures 1 and 2	1-3
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 9 October 2002		Date of mailing of the international search report 11 OCT 2002
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  SUE THOMAS Telephone No : (02) 6283 2454

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2 458 288 A1 (BELENGER) 2 January 1981 figure 2	1-3
A	WO 99/04833 A1 (COMMISSARIAT ENERGIE ATOMIQUE) 4 February 1999 see English abstract	1-31
A	Patent abstracts of Japan JP, 10-3228297 A (BUAA YU:KK) 15 December 1998 whole document	1-31
A	US 5 222 980 A (GEALOW) 29 June 1993 column 3 line 10 to column 5 line 32	1-31
A	WO 00/76288 A2 (SUNSHINE HEART CO.) 21 December 2000 page 4 line 5 to page 6 line 18	1-31

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**Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos :  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos :  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1-22  
Claims 23-30  
Claim 31

(Continued on supplemental sheet)

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-22

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

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**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

**Continuation of Box No: II**

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are different inventions as follows:

1. Claims 1-22 are directed towards a fluid pressure generating means for a heart assist device. It is considered that the housing defining an interior volume having a rigid first portion, a rigid second portion and a flexible third portion and an inlet/outlet port comprises a first "special technical feature".
2. Claims 23-30 are directed towards a heart assist device characterised by the shape and location of the device. It is considered that the housing having a fluid reservoir and fluid generating means that is so shaped as to lie in the pleural cavity comprises a second "special technical feature".
3. Claim 31 is directed towards a heart assist device characterised by a fluid pressure generating means driven by an electric motor with sufficiently low cogging torque such that the natural systolic pressure is sufficient to cause liquid in the blood pumping means to return to the fluid reservoir in the event that the motor stops. It is considered that a mechanism for the patients circulatory system to cause liquid in the blood pumping means to return to the reservoir in the event that the electric motor stops comprises a third "special technical feature".

It is noted that the specification has admitted there are numerous systems for heart assist devices (page 1 lines 5 to 14) including an aortic compression means, a fluid reservoir, a means adapted to pump fluid from the reservoir to the aortic compression means in counterpulsation with the heart. Therefore a heart assist device with these said features cannot be considered to be special technical features in the present inventions. When a claim does not avoid the prior art, its features cannot constitute "special technical features" for the purpose of assessing commonality of invention between claims. Refer to rule 13.2 of the PCT regulations for further explanation.

Since the abovementioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept, *a priori*.

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Information on patent family members

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member			
US	6030336	EP	959912	FR	2744924	WO 9730740
FR	2767874	NONE				
US	4277706	NONE				
FR	2458288	NONE				
WO	9904833	FR	2766373			
US	5222980	AU	25764/92	EP	605544	WO 9305827
WO	200076288	AU	200050548	BR	200011464	EP 1185319
						END OF ANNEX